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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/707,269	11/06/2000	L. Charles Hardy	53415USA8C.038	9169
32692	7590	08/09/2006	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY			EVERHART, CARIDAD	
PO BOX 33427			ART UNIT	
ST. PAUL, MN 55133-3427			PAPER NUMBER	

2891

DATE MAILED: 08/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

6/

<b>Office Action Summary</b>	<b>Application No.</b> 09/707,269	<b>Applicant(s)</b> HARDY, L. CHARLES	
	<b>Examiner</b> Caridad M. Everhart	<b>Art Unit</b> 2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16, 19-26, 29-38 and 41-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16, 19-26, 29-38, 41-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5-23-2006 has been entered.

**Response to Arguments**

Applicant has argued that Kaufman does not teach or suggest the use of a buffer, although components of known buffers are included in the composition taught by Kaufman. Applicant has argued further argued that there is not motivation for combining Kaufman and Mueller .

With respect to the first argument, this argument is respectfully found to be not persuasive for the following reasons: Kaufman taken alone discloses the composition without abrasives(col. 8, lines 43-50). The disclosure is made by Kaufman in col. 8, lines 43-50 that the composition is formed separate from abrasives.

Applicant has argued that both Mueller and Kaufman desire the abrasive function, so that the argument in the Office Action that elimination of a feature whose function is not desired is not a valid argument therefore. With respect to the first argument, this argument is respectfully found to be not persuasive for the following reasons: while both Kaufman and Mueller desire the abrasion function, the function is not desired in the

solution in Mueller, Mueller does not desire the solution to have an abrasion function, as the pad provides an environment for the solution in which it is not desirable for the solution to have an abrasion function. For example, Hudson, cited below, discloses that abrasives in the solution may damage the abrasive pad(col. 6, lines 22-31), and abrasives in the solution are not desirable.

With respect to the second argument, Kaufman discloses that CMP polishing slurries have buffers added in order to maintain the pH(col. 2, lines 28-33). In addition, there is a disclosure that the pH of the composition is maintained in a desired range(col. 8, lines 23-30; col. 9, lines 44-50; col. 10, lines 24-28). These disclosures are disclosures of a buffer in the composition because a buffer is disclosed in order to maintain pH (col. 2, lines 28-33) and desired pH ranges are disclosed(col. 8, lines 23-30; col. 9, lines 44-50; col. 10, lines 24-28). In support of the fact that these disclosures disclose a buffer in the composition, Kenkel, page 113, first paragraph, teaches that a buffer resists changes in pH, and includes a conjugate base and a conjugate acid. The disclosure that acetic acid is a buffer (col. 2, lines 30-33) and that the pH is maintained in a desired range of 4-9(col. 8, lines 23-26) are disclosures of the including of a buffer. In addition, that the addition of acetic acid or phosphoric acid(col. 8, lines 31-34) are disclosures of the including of a buffer, because the teaching of phosphoric acid is so well known as to be in a textbook such as Kenkel(cited in the List of References cited page 117). The composition includes hydroxide from, for example, ammonium hydroxide(Kaufman, col.3, lines 1-8; col. 5, lines 14-22; col. 8, lines 28-34). There would be inherently included a buffer in the composition taught by Kaufman. By adding

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an acid until the desired pH is attained, and that the pH is maintained in a desired range, there has been formed a buffer in the composition disclosed by Kaufman, as supported by Kenkel.

New grounds of rejection are presented below.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 16,19-28,31,36-39, and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman, et al. (US 5,954,997) in view of Hudson (US 5,972,792) .

Kaufman et al disclose a solution which includes an oxidizing agent, a complexing agent, and a passivating agent, which is disclosed as a film forming agent(col. 4, lines 10-15). Kaufman et al further discloses a buffer is included (col. 8, lines 22-33). The buffer may be phosphoric acid, which is a polyprotic protolyte having at least one pKa greater than 7. The disclosure that the pH is maintained in the range of 4-9 by the acid is a disclosure that the acid acts as a buffer, and a buffer includes the salt in equilibrium with the ionized acid, so that the limitation of claim 19 is satisfied. The complexing agent may be a carboxylic acid such as lactic acid or oxalic acid or citric acid, which are multidentate complexing agents. Kaufman et al further disclose that the passivating agent is benzotriazole(BTA)(col. 10, lines 7-10). Surfactant may be included(col. 6,lines 46-48). Halo acid may also be included, as Kaufman et al discloses HF acid(col. 6, lines 28-31).

Kaufman et al disclose that the solution may be separate from particles(col. 8, lines 43-53), so that it would be expected that the concentration of particles in the solution would be within the recited range when separate from the particles.

Hudson discloses a solution which includes oxidants(col. 4, lines 55-58), passivating agent benzotriazole( col. 4, lines 62-65), The solution is abrasive-free(col. 6, lines 5-10 and 25-30). The pH of the solution is controlled(col. 4, lines 10-14).

It would have been obvious to one of ordinary skill in the art at the time of the invention that the composition taught by Kaufman et al without the addition of particles can be used with an abrasive pad as taught by Hudson because Hudson discloses that a polishing composition may be used with an abrasive pad without the abrasive, and Hudson discloses the benefits of using an abrasive pad instead of an abrasive slurry. In addition, the elimination of an element, in this case abrasive particles, is obvious if the function of the element is not desired(MPEP 2144.04[R-1] II), which would be the case when an abrasive pad is used, and as argued above in the Response to Arguments.

Claims 29, 30, and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman, et al. in view of Hudson.

Kaufman et al is silent with respect to the recited concentrations of components and of the recited concentrations of particles.

It would have been obvious to one of ordinary skill in the art to have chosen the recited concentrations of components because concentrations are variables of the art which can be determined by one of ordinary skill in the art. Kaufman et al disclose that the concentrations can be varied in Fig. 1 and Fig. 2 and descriptions of the figures in col. 4, lines 35-48).

With respect to the concentration of particles, Kaufman et al disclose that the solution may be separate from particles(col. 8, lines 43-53), so that it would be expected that the concentration of particles in the solution would be within the recited range when separate from the particles, and Hudson discloses the use of the solution without particles, as particles may damage the abrasive pad(col. 6, lines 25-30).

Cited Prior Art

The prior art of record not relied upon is considered relevant to applicant's disclosure:

Sasaki et al (US 5,770,095).

Sasaki et al discloses a composition for polishing Cu(col. 3, lines 33-35 and 11-13).

The composition includes benzotriazole as a protective of passivating agent(col. 3, lines 37-40). The composition further includes EDTA(col. 4, lines 13-17), which is a multidentate complexing agent, oxidizing agent(col. 4, lines 2-10), and polyprotic acid(col. 4, lines 2-10).

Hirabayashi et al (US 5,575,885).

Hirabayashi et al discloses a composition for polishing Cu(col. 2, lines 37-50). The composition includes acids, oxidizer, water(col. 2, lines 47-54). The composition has the pH adjusted(col. 4, lines 55-59). The composition has activity without particles(col. 8, lines 55-65).

Watts et al (US 6,096,652).

Watts et al discloses a composition for polishing Cu(col. 3, lines 47-50). The composition includes a coordinating ligand(complexing agent)(col. 6, lines 55-57), benzotriazole(col. 5, lines 60-65), an oxidizing agent(col. 6, lines 55-60). The pH is maintained within a desired range(col. 6, line 20-21 and 55-60). The abrasive component is separate from the chemical component(col. 5, lines 33-38).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caridad M. Everhart whose telephone number is 571-




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272-1892. The examiner can normally be reached on Monday through Fridays 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, B. Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
CARIDAD EVERHART  
PRIMARY EXAMINER

C. Everhart  
8-5-2006